THE CITY OF SAN DIEGO

REPORT TO THE CITY COUNCIL

DATE ISSUED: May 4, 2006   REPORT NO: 06-052

ATTENTION: Public Safety & Neighborhood Services Committee
Agenda of May 10, 2006

SUBJECT: Communications Update

REFERENCE: Report No. 04-057, Comprehensive Public Safety Needs Assessment
dated March 12, 2004

REQUESTED ACTION:

This is an informational summary updating the status of Communications Systems in the Fire-Rescue Department.

STAFF RECOMMENDATION:

Accept the report

SUMMARY:

Over the past several years, the San Diego Fire-Rescue Department has come before the Public Safety and Neighborhood Services (PS&NS) Committee to provide an update of the status of various Communications related projects. We appreciate the support that we have received in the past years, and submit this report to keep the Committee informed on progress that has been made in the following areas:

- Mobile Data Computers (MDC's)
- Radio System, Paging and Microwave Upgrades
- VHF Radios
- Interoperability Issues

The Information Technology & Communications (IT&C) Department is responsible for the design, installation and maintenance of the City's wireless communications systems and services. The four major City-owned networks that provide these services are the 800 MHz Radio Network, the Mobile Data Network, the Digital Microwave Network and the Digital Paging Network. These networks and the related systems that make up the City's public safety wireless communications infrastructure are now at, or are nearing the end of their service and maintenance lifecycle. In order to guarantee that the critical communications requirements of our public safety services will be met in the future, it is imperative that they be replaced over the

next several years. The first step in the planning process to replace and upgrade these systems was the development of the Wireless Communications Long-Term Plan, which was released in 2003.

Within that plan, strategic public safety initiatives were described and categorized into Short Term, Immediate Term and Long Term projects, and then named the Public Safety Communications Project. The 800 MHz Radio System Upgrade was included in the Immediate Term goals (FY2006-FY2009), but due to the lack of bond funding, many of the projects were put on hold or severely altered.

With the help of the Mayor's office, this Committee and City Council, the Fire-Rescue Department has taken a phased approach to solving our equipment problems in partnership with other City departments. Replacing costly yet outdated equipment is vital to insure our crews are well prepared to respond to incidents with the necessary technology to help them mitigate these emergencies. With creative funding solutions, grant awards and prioritized budgeting, new projects and equipment have been implemented and installed over the past several years.

MOBILE DATA COMPUTERS (MDC's)

Since 1991, Mobile Data Terminals (MDT's) were the primary method of communicating incident information and status changes between Fire and Medical units to the Fire Communications Center (FCC). The use of the Automatic Vehicle Locators (AVL's) allowed for continuous tracking of emergency vehicles. This gave the FCC the ability to send the closest units to incidents, to more efficiently manage movement of the fleet to cover for emergencies, and increased firefighter safety. The ability to send the closest unit and effectively manage the movement of the fleet has helped to reduce emergency response times without increasing the number of vehicles. Firefighter safety has been increased by ensuring that dispatch personnel are able to locate all units in case backup or assistance is needed.

In early 2000, the MDT/AVL System reached the end of its service life and began to experience a higher rate of failure. The equipment was outdated and repair parts were no longer available. The data communications protocol used by the 800 MHz data radio was no longer supported by Motorola or any other vendor in the communications industry. Failure to replace these systems would have a profound negative impact on the citizens of San Diego. Dispatch of emergency calls would take longer, response times would increase, and the work load in the dispatch center would be overwhelming. Upgrading this technology is vital to the emergency operation of San Diego Fire-Rescue.

As part of the Public Safety Communications Project II (PSCPII), plans were developed to replace the antiquated Mobile Data Terminals and move the data transmissions to a commercial wireless vendor. This would also aid in the upgrade of the City's 800 MHz radio system. The total project cost of approximately $150 million was being considered for bond funding. However, due to the City's financial dilemmas, the PSPCII was put on hold.

Through grant funding by the Urban Area Security Initiative, a large portion of Fire-Rescue's Mobile Data Communications project was implemented. In October 2005, the first units went

live on the new VisiNet Mobile™ system. To-date, all engines, trucks, Advanced Life Support (ALS) ambulances and battalion chief's vehicles have been installed with this new system.

System features include:

- Instant Call Information and Updates
- Automatic Status Changes
- Integrated Mapping and Driving Directions
- Imbedded Automatic Vehicle Locators (AVL's)
- Messaging and Paging capabilities
- Crew Identification
- Hot Spots installed at every fire station which allows for instant software updates and down loading of data

Future Phases of the project will include:

- Interface to the Fire Records Management System
- Electronic Pre-Fire and Inspection Information
- Connection to the county-wide HazMat database
- Electronic Building Footprints and site-specific maps
- I-zone information (planned evacuation routes, helicopter drop points)
- Streaming video
- Interoperability with Lifeguards, PD and other Fire Agencies

In addition to the many hours dedicated by Fire-Rescue staff, this project was completed with the cooperation of several other City Departments including: Office of the Chief Information Officer (CIO), Information Technology & Communications (IT&C), the Project Management Office (PMO), San Diego Data Processing Corporation (SDDPC), and contractor Enforcement Support Agency (ESA). The cost for the Mobile Data Computer project was $2.2 million.

800 MHz RADIO SYSTEM, PAGING AND MICROWAVE UPGRADES:

Currently in progress is an upgrade to the 800 MHz Radio System which will include new infrastructure equipment. This will replace the existing infrastructure equipment that is in operation today, and was another driving factor in replacing Fire-Rescue's MDT's, which relied on the old 800 MHz equipment. Now that the MDC's are operational on the commercial wireless network, the old MDT System has been taken out-of-service. The new equipment has been ordered, and installations are projected to commence in mid to late summer 2006. These installations will be at both the communication sites and dispatch facilities. It is anticipated that it will take approximately 24-months to complete the entire process.

The cost of the radio system upgrade is $15.1 million, and is being paid for through a lease purchase from Motorola Credit Corporation. The City will be making payments of approximately $2.4 million per year over a seven (7) year period, and the payments will commence in the FY2007 budget year. As approved by the City Council, a payment of

approximately $2 million for an initial down payment and tax payment will be made from the IT Fund and Homeland Security grants in FY2006.

This upgrade is a contingency plan to insure that the City has reliable and maintainable communications for at least seven (7) years, which will occur as we continue to plan and budget for the Public Safety Communications Project at a cost of approximately $150 million.

In previous PS&NS meetings we reported that upgrades to the Paging and Microwave networks were underway. We are happy to report that the Paging System upgrade has been completed. The project included the replacement of all of the transmitters and controller equipment at communications sites, which resulted in the existing pagers possessed by city users to be used with the new infrastructure.

The Digital Microwave Network is currently in the process of being replaced, and its timeline for completion is by the end of calendar year 2006. All of the equipment currently at the communications sites will be replaced.

VHF MOBILE AND PORTABLE RADIO REPLACEMENTS:

In 2005, the Federal government mandated that all VHF radios be converted from analog to digital frequencies to allow for growth potential in the frequency ranges. Within the fleet of San Diego Fire-Rescue units, this meant that 220 mobile radios and 200 portable radios would need to be replaced. The existing analog VHF radios do not have the capability to handle these newly mandated compressed digital frequencies.

VHF radios are our primary means to communicate major wildland fires with outside agencies, such as the California Department of Forestry and U.S. Forest service. These agencies maintain only the VHF radio system for incidents on state and federal lands. Due to our cooperative agreements for sending and receiving assistance with these agencies, VHF radios are vital to our operation. The VHF system is also our primary means to communicate with Air Resources that respond to our city's wildland incidents. Without operable VHF radios, coordinating air resources would be an arduous and dangerous proposition.

Although our primary 800 MHz Radio System is reliable, in order to have proper communication within our city, we must have a contingency plan in place in case of failure. That requires the VHF radio system to be maintained as a back up. We currently have emergency dispatch plans in place in case of an 800MHz failure, where all dispatchers and emergency responders would switch over to VHF frequencies if failure were to occur. Since many transmitters for the 800 MHz system are attached to buildings, we may need to rely on the VHF system, whose transmitter sites are primarily on mountain tops, in the case of a major disaster such as an earthquake.

San Diego Fire-Rescue has again taken a phased approach to replacing our VHF mobile and portable radios. Donations after the Cedar Fire, as well as the FY2005 budget were used to fund the replacement of the VHF portable radios. A phased approach in the General Fund Budget

over three (3) fiscal years will allow the replacement of the VHF mobile radios. With the support of the Mayor's FY2007 proposed budget, purchases of the final phase of radios will occur in July 2006. Installation of all VHF mobile radios will be completed by the end of the calendar year 2006. This will allow us to meet the federally mandated guidelines which were extended in this region due to existing treaties with Mexico that need to be resolved.

INTEROPERABILITY:

The San Diego region has an extensive interoperable communications vision, including the expansion of existing programs in voice and data.   A Region-wide plan supports this vision by providing updated and interoperable voice communications, which will begin to replace the City of San Diego network and equipment in accordance with the long–range interoperable sharing agreements and the Tactical Interoperable Communications Plan (TICP). San Diego Fire-Rescue is a cooperative partner in many of the short and long term planning solutions throughout the region.

Through UASI grant funding, the department was approved to purchase an Interoperable Communications Trailer. This unit will be a region-wide asset and will be staffed by San Diego Fire-Rescue personnel. The unit will employ current, familiar technology like 800 MHz and VHF radios, balanced with state-of-the-art equipment like Voice Over Internet Protocol (VOIP) and an inter-operable communications bridge. This unit will provide San Diego Fire-Rescue personnel the opportunity to train on the latest communications equipment to ensure our preparedness for wide-scale, all-risk disasters. It will be deployed for major incidents county-wide, as well as for drills and exercises to keep skill levels current.

Fire-Rescue is also a participant in the Regional Command, Control and Communications System (3Cs Project), which will connect dispatch/emergency operations centers across the southwest region. The projects will leverage existing efforts, spanning San Diego County, Orange and Yuma (AZ) counties, linking public safety agencies via high-speed, secure microwave and fiber network. As microwave access is improved, the project's plan to incorporate all local public safety dispatch and emergency centers within the coverage area will be at a pace of 15 to 20 agencies per year, with our department being included in Phase 1 of the project. This inclusion will provide video conferencing capability at the Fire Communications Center, Department Operations Center and Senior Staff conference room, and will be linked to San Diego Police Department, California Department of Forestry and County Offices.

At the dispatch center level, San Diego Fire-Rescue and North County Joint Powers Authority continue to make strides toward interoperability by linking their Computer Aided Dispatch Systems. This interface was funded by a local developer whose housing project is built on the border between San Diego and Rancho Santa Fe. The link will lessen the time it takes to process incidents between the two agencies.   When an emergency call is received by one dispatch center, and the responding units are dispatched from another center, the call information will be automatically transferred to that center. This saves valuable time in the current manual dispatch process that is occurring today. The interface will track the locations and availability of all units from both agencies, ensuring that the closest, most appropriate resource is sent in a timely manner.

San Diego Fire-Rescue personnel continues to participate in region-wide committees, drills and exercises that incorporate the vision of interoperability and cooperative participation across emergency disciplines.

NEXT STEPS:

As we continue to work on the existing Communications projects outlined in this report, we are looking ahead to future projects which will enhance our ability to provide emergency assistance to the citizens of San Diego. We have identified the replacement of our aging Station Alerting system as the next highest priority project that would have the greatest impact on our service delivery.

Our current Station Alerting system is failing, and relies on 10-year old technology from an outdated piece of hardware called a "digibox". Parts for this system are no longer supported by the manufacturer, and cannot be purchased through conventional means. Fire-Rescue has been relying on donations from other Fire Departments who have replaced their Station Alerting systems. When those donations run out, we could turn to eBay for finding replacement parts if necessary.

The newer Station Alerting technology is software based rather than hardware based. As upgrades become necessary, it will be a programming rather than equipment change. At the station level the new system will include features like:

- Individual dorm alerting
- Ability to uniquely alert up to 9 different units in one station
- Configurable pre-recorded messages which prepare units for a response
- Graduated lighting to alert units for nighttime responses

These features have been shown to assist emergency responders in quickly and safely responding to emergencies at all times of the day or night. The approximate cost for this new technology is $2 million. We would propose a phased approach to tackling this issue through outfitting new stations as they come on line, and retrofitting existing stations over several years. In FY2007, we would develop a Request for Information (RFI) to identify a vendor and provide hard costs in the FY2008 budget.

CONCLUSION:

As evidenced in this report, keeping the 9-1-1 and emergency infrastructures running is a cooperative effort between many City Departments and region-wide committees. San Diego Fire-Rescue appreciates the support of the Mayor's office and the City Council members on continuing this effort. The success of the Mobile Data Computer project was an excellent example of how teamwork and collaboration throughout the City can translate into significant changes in delivering emergency services to the citizens of San Diego. Planning, strategy, project management, funding solutions and technical expertise are just some of the necessary

components to the successful implementation of these ventures. This template for success will be used for future Communications projects such as replacing the aging Station Alerting system.

FISCAL CONSIDERATIONS:

None at this time.

PREVIOUS COUNCIL and/or COMMITTEE ACTION:

There are no previous council committee actions.

COMMUNITY PARTICIPATION AND PUBLIC OUTREACH EFFORTS:

None.

KEY STAKEHOLDERS AND PROJECTED IMPACTS:

The San Diego Fire-Rescue Department and the citizens of San Diego will benefit from these technological advances. Improved response times, up-to-the minute information sharing, and firefighter safety are all improvements that will be derived from keeping our equipment and technology up-to-date and running efficiently.

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